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U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

January 9, 1987

REPLY TO
ATTN OF: 329 (ES-098 after Feb. 1)

Re: Pasco Sanitary Landfill/Resource Recovery Corporation Data

Flora J. Goldstein, Regional Hydrogeologist
WA Department of Ecology
N. 4601 Monroe, Suite 100
Spokane, WA 99205-1295

Dear Ms. Goldstein:

A few weeks ago Lori Cohen sent you data packets from EPA's sampling of wells at and within a mile downgradient of the Pasco Sanitary Landfill last October. The purpose of this letter is to inform you of the conclusions and recommendations resulting from that study. I understand that you are reviewing DOE's monitoring requirements for the Pasco Sanitary Landfill, which were established based in part on the data from Ecology & Environment's (E&E) June 1986 report. From these data sets, EPA recommends increased monitoring of organics at the landfill monitoring wells and downgradient of the landfill. The basis for this recommendation will be described below.

EPA's recent review of E&E's sampling methods indicates that the inorganics data collected by E&E are only minimally useful because of sediment in the bailed samples. Questions were initially raised concerning the validity of the total metals data E&E obtained from the monitoring wells since they differed greatly from the data previously obtained by the landfill's consultant (John Zillich, J-U-B Engineers, Inc.). Jim Hileman and I went to Pasco the week of Oct. 20, 1986 to try to resolve the metals data inconsistencies. We sampled 3 wells (EE-1, EE-2, JUB-CW) using both the landfill's bladder pump and bailers (like E&E did), provided duplicate samples to the landfill to send to their laboratory, and ran rinsate analyses on both sampling devices. Our procedure at each well was to:

1) Decontaminate and take a rinsate sample from the bladder pump.

2) Purge 3 to 4 borehole volumes with the bladder pump.

3) Take a sample with the bladder pump.

4) Decontaminate and take a rinsate sample from the bailer.

5) Take a sample using the bailer ("bailer sample #1).

6) Repurge the well with the bailer and resample ("bailer sample #2) (not done at EE-2).

Zillich contended that the wells had silted in, and that bailing stirred up so much silt and clay that the total metals analysis merely reflected inorganic muds in the sample. Our sampling essentially confirmed this: the "clear" samples obtained with the bladder pump had much lower levels on most metals than the bailed samples. However, inorganics which are generally dissolved in ground water (salts like calcium, magnesium, potassium and sodium) were not significantly affected by bailing. It seems unlikely that solvents dissolved in ground water would be affected either.

Unfortunately, no one had raised the question of whether the volatile organics data were similarly affected by muddy samples until we showed up at the landfill, and we weren't equipped to take any VOA samples. I've talked to several chemists and hydrogeologists about this, and there doesn't seem to be any consensus on this issue. From this evaluation, I believe that there must be a ground water release to get 480 ppb trichloroethene (E&E's value for EE-3), although one could probably argue with the magnitude of the number. In addition, Zillich sampled for VOAs at EE-2 while we were there in October and found "significant levels" of organics (personal communication).

EPA plans to go out and resample the downgradient domestic wells in the next few months, since three of the drinking water wells and the irrigation well immediately downgradient showed low (1-3 ppb) estimated levels of various organic solvents. At the same time we will probably resample the three on-site monitoring wells which E&E found contaminated (EE-2, EE-3, JUB-2) for VOAs using a bladder pump and do a similar bladder pump/bailer comparison on at least one of them.

Although the organics values obtained from the downgradient wells are below the required detection limit (5 ug/L), we have several reasons to be concerned about them:

1) The chemists at E&E who did the QA review of the data felt that the "hits" were probably real because they consider Analytical Resources, Inc. a very good lab.

2) The samples probably don't reflect true ground water conditions, and the values may be biased low because:
   a) The drinking water samples were taken at "point of use", usually kitchen faucets, and wells were not purged.
   b) The wells are not constructed as monitoring wells, so they may have inappropriately long screens resulting in diluted samples.
   c) The irrigation well has a 100 HP turbine pump which probably aerates the water enough to cause some volatilization before the water reaches the surface. We were surprised and concerned to find <u>any</u> volatiles in that water sample.

3) While there are no federal standards for those organics, some of them are considered to be carcinogens, and some of their values are not far below proposed standards. We want to make sure those levels aren't rising or seasonally influenced.

The inorganics data had some problems which I should point out:

1) Much of the lead data was rejected due to poor spike recovery (10% for some samples). This seems to be a persistent problem at this site; it happened with E&E's 1985 lead analyses and with the samples that Zillich took concurrently with ours.

2) Many of the selenium analyses were diluted to the point that the detection limit (25 ug/L) exceeded federal standards (10 ug/L).

3) the two bailed samples at JUB-CW had unbelievably low levels of calcium, iron, and magnesium, considering that both of these samples were quite muddy. I have asked one of our chemists to investigate the cause of this and determine if the remaining analyses of these two samples are valid.

I would also like to comment on the condition of the existing monitoring wells. By current EPA protocol, all of the wells were inappropriately screened (two split 5-foot screens on the JUB wells and 20-foot screens on the E&E wells), and none of them were properly developed. While 10-foot screens were considered acceptable at the time, E&E proposed (and the EPA Project Officer at the time, Jack Sceva, approved) 20-foot screens to accomodate anticipated regional water-level declines over the next 10 to 20 years from irrigation pumping. The long screens probably didn't help well development any, but it may be that it's just not possible to pump 2-inch diameter wells in those materials hard enough to prevent silting in. I would suggest that any future monitoring wells be 4 inches in diameter to accomodate a submersible pump for development.

As for future monitoring at the landfill, since EPA's sampling suggests that iron is probably the only metal exceeding any standards there, and given the dubious condition of the wells, it may be appropriate to cut back the frequency of inorganics sampling at all the wells to, say, annually rather than quarterly. On the other hand, volatile organics monitoring needs to be expanded, particularly around the Zone A pit and downgradient off-site toward Pasco. I believe this would require some new wells near the irrigation well 9/30-21J1 to determine if there is a plume migrating off-site and to establish the landfill as its source. Zillich says he would like to try redeveloping some of the on-site wells, but if that fails, new wells may also be needed on-site.

It seems appropriate for Ecology to come to an agreement with Larry Dietrich for new monitoring requirements, or issue a directive or order for increased monitoring requirements. If this cannot be accomplished, EPA may use Superfund authority to see that the work is accomplished. Please keep Lori Cohen and me informed of any actions Ecology plans to take at the site. We would like to discuss this further with you.

I plan to send you a copy of the EPA sampling report when I complete it, probably sometime next month. If you have any questions, comments, or suggestions, please call me at (206) 442-1641 or Lori Cohen at (206) 442-2712.

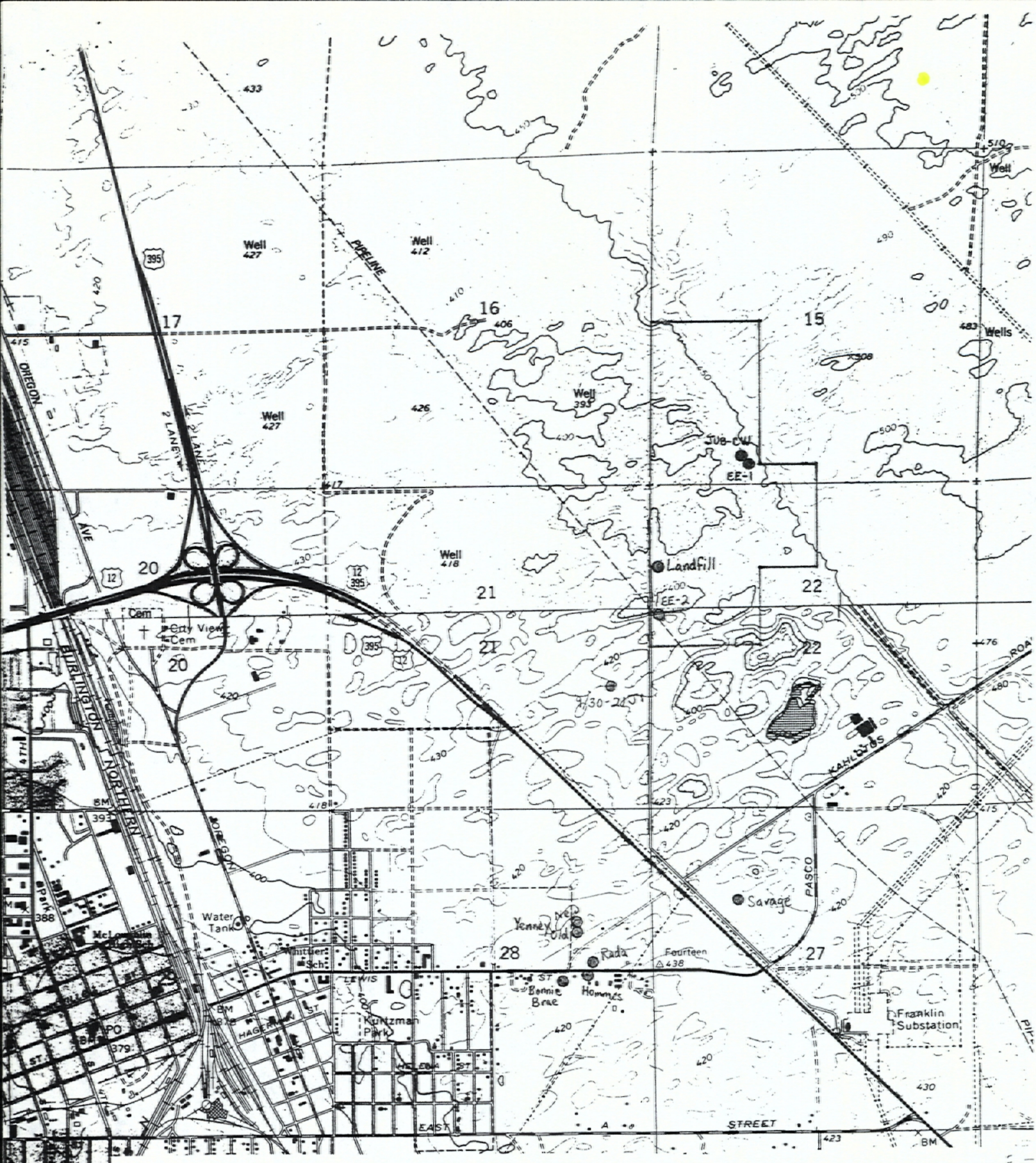
Sincerely,

Marcia Knadle

Marcia Knadle
Hydrogeologist

Enclosures

CC: Lori Cohen
John Osborn
Bob Kievit, WOO


Well
427
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412
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427
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393
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418
PIPELINE
OREGON
2 LANE
AVE
17
16
15
20
21
22
Landfill
EE-1
EE-2
JUB-CW
City View Cem
Cem
BURLINGTON NORTHERN
OREGON
Water Tank
Whittier Sch
Park
McLoughlin
PO
Kuntzman Park
LEWIS
HAGEMAN
HOLDEN
EAST
STREET
Yenney
Old
Rada
Fourteen
△438
Bonnie Brae
Hommes
Savage
PASCO
KAHLOTUS
Franklin Substation
28
27
BM
SCALE 1:24 000
1 MILE
7000 FEET
1 KILOMETER
CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
GN
MN
29° MILS
20° 356 MILS

PASCO LANDFILL/RRC TOTAL METALS DATA
October 1986 (ug/L)

Location	Lab #	Sample #	Al	As	Ba	Cd	Ca	Cr	Co
Transport blank	00	MJB119	88U	10U	4.1U	4.8U	16	10U	6.8U
Bonnie Brae	01	MJB120	U	U	55	U	70900	U	U
Transfer blank DW	02	MJB121	U	U	U	U	49	U	U
Rada	03	MJB122	U	U	90	U	74200	U	U
Yenney (old)	04	MJB123	103	U	82	U	67100	U	U
Yenney (new)	05	MJB124	U	U	75	U	66400	U	U
Hommes Hideaway	06	MJB125	U	U	73	U	64400	U	U
Savage	07	MJB126	U	U	104	U	81200	50	U
Landfill DW well	08	MJB127	U	U	71	U	58200	U	U
9/30-21J1 (Irr.)	09	MJB128	U	U	76	U	65100	U	U
Transfer blank IRR	10	MJB129	U	U	U	U	108	U	U
EE-1 pump rinsate	11	MJB130	U	U	U	U	781	U	U
EE-1 pump sample	12	MJB131	U	U	61	U	58500	U	U
EE-1 bailer rinsate	13	MJB132	U	U	U	U	144	U	U
EE-1 bailer sample #1	14	MJB106	440	U	73	U	61600	11	U
EE-1 bailer sample #2	15	MJB107	12800	U	230	U	78900	19	9.0
EE-2 pump rinsate	16	MJB108	U	U	6	U	2080	U	U
EE-2 pump sample	17	MJB109	U	U	80	U	76600	20	U
EE-2 bailer rinsate	18	MJB110	U	U	U	U	29	U	U
EE-2 bailer sample	19	MJB111	3380	12	188	U	95200	502	U
JUB-CW pump rinsate	20	MJB112	U	U	U	U	900	U	U
JUB-CW pump sample	21	MJB113	U	U	59	U	60700	U	U
JUB-CW bailer rinsate	22	MJB114	U	U	5	U	101	U	U
JUB-CW bailer sample1	23	MJB115	475	U	176	U	9.6U	10	U
JUB-CW bailer sample2	24	MJB116	166	22	551	14	U	51	73
Transfer blank MW	25	MJB117	U	U	U	U	86	U	U

Location	Lab #	Sample #	Cu	Fe	Mg	Mn	Ni	K
Transport blank	00	MJB119	6U	69	7.7U	3.1U	10U	14U
Bonnie Brae	01	MJB120	U	71	22400	U	U	9070
Transfer blank DW	02	MJB121	U	39	U	U	U	U
Rada	03	MJB122	U	67	24000	U	U	8760
Yenney (old)	04	MJB123	U	97	20900	U	U	8600
Yenney (new)	05	MJB124	77	241	21100	4	U	8600
Hommes Hideaway	06	MJB125	U	74	18200	U	U	5040
Savage	07	MJB126	10	49	26600	U	U	9260
Landfill DW well	08	MJB127	U	69	22200	U	12	5950
9/30-21J1 (Irr.)	09	MJB128	U	423	22600	U	U	7830
Transfer blank IRR	10	MJB129	U	88	U	U	U	U
EE-1 pump rinsate	11	MJB130	19	79	162	U	U	67
EE-1 pump sample	12	MJB131	U	214	21900	5	U	7020
EE-1 bailer rinsate	13	MJB132	U	66	U	U	U	U
EE-1 bailer sample #1	14	MJB106	U	1550	22900	40	158	6570
EE-1 bailer sample #2	15	MJB107	22	26900	30100	612	65	9100
EE-2 pump rinsate	16	MJB108	U	45	624	U	U	210
EE-2 pump sample	17	MJB109	U	560	24400	21	49	8330
EE-2 bailer rinsate	18	MJB110	U	46	U	U	U	U
EE-2 bailer sample	19	MJB111	U	12500	27900	185	136	10000
JUB-CW pump rinsate	20	MJB112	12	86	186	U	U	74
JUB-CW pump sample	21	MJB113	U	691	22100	13	U	6350
JUB-CW bailer rinsate	22	MJB114	U	123	U	18	16	U
JUB-CW bailer sample1	23	MJB115	U	18	U	404	46	8560
JUB=CW bailer sample2	24	MJB116	104	6.8U	U	1860	95	13800
Transfer blank MW	25	MJB117	U	71	U	U	12	36

Location	Lab #	Sample #	Na	Th	Sn	Va	Zn
Transport blank	00	MJB119	342	10U	37U	5.8U	3.1U
Bonnie Brae	01	MJB120	32200	U	U	18	68
Transfer blank DW	02	MJB121	344	U	U	U	U
Rada	03	MJB122	344	U	U	21	63
Yenney (old)	04	MJB123	49400	U	U	14	85
Yenney (new)	05	MJB124	48600	U	U	U	690
Hommes Hideaway	06	MJB125	35500	U	U	U	205
Savage	07	MJB126	51400	U	U	13	27
Landfill DW well	08	MJB127	43500	U	U	16	420
9/30-21J1 (Irr.)	09	MJB128	44100	U	U	29	29
Transfer blank IRR	10	MJB129	580	U	U	U	U
EE-1 pump rinsate	11	MJB130	876	U	U	U	U
EE-1 pump sample	12	MJB131	44600	U	U	21	4
EE-1 bailer rinsate	13	MJB132	472	U	U	U	4
EE-1 bailer sample #1	14	MJB106	34200	U	U	10	26
EE-1 bailer sample #2	15	MJB107	46300	U	U	46	76
EE-2 pump rinsate	16	MJB108	1530	U	U	U	8
EE-2 pump sample	17	MJB109	43900	U	U	13	9
EE-2 bailer rinsate	18	MJB110	523	U	U	U	U
EE-2 bailer sample	19	MJB111	51200	U	U	46	32
JUB-CW pump rinsate	20	MJB112	818	U	U	U	4
JUB-CW pump sample	21	MJB113	41100	U	U	15	U
JUB-CW bailer rinsate	22	MJB114	1080	U	U	U	U
JUB-CW bailer sample1	23	MJB115	42600	U	43	62	95
JUB-CW bailer sample2	24	MJB116	45500	17	86	170	232
Transfer blank MW	25	MJB117	497	U	U	14	U

Pb data rejected. Sb, Be, Se, and Ag not found above detection limits in any sample. Hg ranged from 0.3 to 0.7.